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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/500,124

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EXAMINER

NGUYEN, KHANH TUAN

ART UNIT

PAPER NUMBER

1796

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DELIVERY MODE

03/18/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/500,124	Applicant(s) TAKAHASHI ET AL.	
	Examiner KHANH T. NGUYEN	Art Unit 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 4 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 November 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-18 and 20-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-18 and 20-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Final

Response to Amendment

1. The amendment filed on 11/30/2007 is entered and acknowledged by the Examiner. Claims 1, 4-18, and 20-24 are currently pending in the instant application. Claims 2, 3, and 19 have been canceled.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 4-18, and 20-24 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Kodas et al. (U.S. Pat. 6,951,666 B2).

With respect to claims 1, 4, 5, 10 and 14-18, Kodas discloses an electrically conductive paste (i.e. precursor composition) comprising of metal precursor, solvents, micron-sized particles having an average size of at least about 0.1 micron (Col. 4, lines 24-25 and Col. 24, lines 45-48), nanoparticles having average size from about 10 to 80 nanometer (Col. 4, lines 27-28), vehicles, reducing agent and other additives such as dispersant (Col. 2, lines 58-61 and Col. 4, lines 15-20). Kodas also discloses silver metal precursor are preferred, in particular, silver nitrate, silver oxide and silver carbonate (Table 1, Col. 8, lines 63-67 and Col. 14, lines 18-19). The reference further discloses a inducing agent (i.e. reducing agent) such as alpha terpineol or other low vapor pressure solvent such as diethylene glycol, ethylene glycol, hexylene glycol, NMP, tri(ethylene glycol) dimethyl ether and ethylene glycol diacetate capable of reducing silver oxide to silver at low temperature (Col. 13, lines 57-64, Col. 15, lines 46-53 and Table 4). The reducing agent is preferably at least about 20-60 weight percent (Col. 15, lines 21-28). Kodas discloses the electrically conductive paste composition may be printed onto a substrate (Col. 29, lines 10-21) and follow by heat treatment (Col. 29, lines 45-50). Kodas further discloses a rheology modifier selected from styrene allyl

alcohol, ethyl cellulose, carboxyl methylcellulose, nitrocellulose, polyalkylene carbonates, ethyl nitrocellulose and the like useful for as dispersing agent (Col. 20, lines 46-55). Kodas also discloses using polyvinyl pyrrolidone polymer to prevent agglomeration of nanoparticle of silver compound such as Ag-oxide, Ag-acetate, and Ag-carbonate (Col. 7, lines 39-58 and Col. 10, lines 44-45).

The reference specifically or inherently meets each of the claimed limitations in their broadest interpretations. The reference is anticipatory.

In the alternative that the above disclosure is insufficient to anticipate the above listed claims, it would have nonetheless been obvious to the skilled artisan to produce the claimed composition, as the reference teaches each of the claimed ingredients within the claimed proportions for the similar utility. The burden is upon the applicant to prove otherwise. *In re Fitzgerald*, 205 USPQ 594.

Regarding claim 20, the lower limit of the instant claim includes 0 (zero) parts of dispersant, hence, Kodas reference need not teach the presence of dispersants.

Regarding claim 21, Kodas discloses an electrically conductive paste having a viscosity of at least about 1000 centipoise, which is equivalence to 10 poise (Abstract).

Regarding claims 6-9, 11-13, 22 and 23, these claims contain phrases such as "obtained by," "used to obtain" and "produced by" are considered to be product by process claims. The subject matter would have been obvious to the skilled artisan

because the patentability of a product by process claim does not depend on its method of production and where the examiner has found a similar product, the burden rests with the applicant to prove that that product is patentably distinct. See *In re Thorpe*, 227 USPQ 964 (CAFC 1985); *In re Marosi et al*, 218 USPQ 289; *In re Pilkington*, 162 USPQ 145. "The lack of physical description in a product-by-process claim makes the determination of the patentability of the claim more difficult, since in spite of the fact that the claim may recite only process limitations, it is the patentability of the product claimed and not the process that must be established. We are therefore of the opinion that when the prior art discloses a product which reasonably appears to be identical with or only slightly different than a product claimed in a product-by-process claim, a rejection based alternatively on either section 102 or 103 of the statute is eminently fair and acceptable. As a practical matter, the Patent Office is not equipped to manufacture products by the myriad processes put before it and then obtain prior art products and make physical comparisons therewith." *In re Brown*, 173 USPQ 685,688 (CCPA 1972).

Regarding claim 24, it has been held that the recitation that an element is "adapted to" perform or is "capable of" performing a function is not a positive limitation but only requires the ability to so perform. The recitation of a new intended use for an old product does not make a claim to that old product patentable, see *In re Schreiber*, 44 USPQ2d 1429 (Fed. Cir. 1997).

Response to Arguments

5. The rejection of claims 1 and 4-24 under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Kudas et al. (U.S. Pat. 6,951,666 B2 hereinafter, "Kudas") is maintained for the reasons set forth below.

Applicant's arguments filed on 11/30/2007 have been fully considered but they are not persuasive.

In response to Applicant's remark on pages 6-7, Applicant argues that Kudas reference cited by the Examiner fails to disclose or suggest all of the elements of claim 1. Specifically, Applicants argue that Kudas fails to disclose or suggest the newly claimed dispersants (Page 6 of Remarks), e.g. hydroxylpropyl cellulose, polyvinyl pyrrolidone, and polyvinyl alcohol. Applicant further stated "when one or more of the dispersants disclosed by Kudas are used, it is possible for secondary aggregation to occur" (Page 7 of Remarks, lines 3-4). In other words, the dispersants of Kudas does not prevent secondary aggregation from occurring. Examiner respectfully disagrees with the Applicant argument.

Applicant should refer to Kudas reference (Col. 7, lines 39-46 and lines 56-57) wherein Kudas specifically teaches coating a nanoparticle (i.e. silver containing metal precursor) with a polymer material such as **polyvinyl pyrrolidone** to prevent agglomeration of the nanoparticles due to high surface energy. In one embodiment, Kudas teaches the said polymer can decompose during heating to enable the nanoparticles to sinter (fuse) together (Col. 7, lines 49-51). Kudas also discloses adding a rheology modifier such as ethyl cellulose and carboxy methylcellulose to the

composition in order to improve particle dispersion and reduce settling of particles (Col. 20, lines 46-55). Thus, Kudas reference anticipated the amended limitations.

Applicants further argue “when an electrically conductive composition employing the dispersant of Kudas is coated and heated at a low temperature of 150 to 200 °C, the dispersant will remain, and therefore, the quality of the composition is deteriorated” (Page 7 of Remarks, lines 4-6). Examiner respectfully disagrees with the Applicant argument.

Kudas teaches a polymer such as polyvinyl pyrrolidone can decompose (i.e. will not remain) during heating to enable the nanoparticles to sinter (fuse) together (Col. 7, lines 49-51). Moreover, Applicants have not submitted factual evidence showing that the quality of the composition of Kudas deteriorate with the disclosed polyvinyl pyrrolidone polymer. Thus, a known or obvious composition does not become patentable simply because it has been described as somewhat inferior (deteriorating quality) to some other product (precursor composition of Kudas) for the same use, see *In re Gurley*, 27 F.3d 551,554,31 USPQ2d 1130, 1132 (Fed. Cir. 1994).

Base on the above rational, it is believed that the claimed limitations are met by the reference submitted and therefore, the rejection is maintained.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KHANH T. NGUYEN whose telephone number is (571)272-8082. The examiner can normally be reached on Monday-Friday 8:00-5:00 EST PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571) 272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark Kopec/
Primary Examiner, Art Unit 1796

/KTN/
03/03/2008